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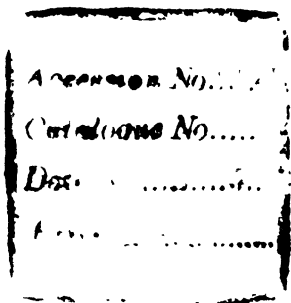
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THE ESSENTIALS OF A MODERN COUNTRY HOUSE

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FOREWORD

To the average dweller in the towns the vital problem of a sufficiency of light and air is becoming increasingly difficult of solution as the drift towards urbanisation continues. There arises thus the necessity for devising a plan for reversing the movement. Living in the country within easy reach of the towns by means of rapid means of transport has become possible and Mr. Chakravarti in his little booklet contrives to impress with cogency and force the practicability of this idea. The author draws his readers' attention to the manifold advantages of living in the country and as a practical engineer he suggests that simple scientific means of hygiene and sanitation are available to every man of modest purse who proposes to live in the country. I congratulate the author on his attempt.

R. N. Mookerjee

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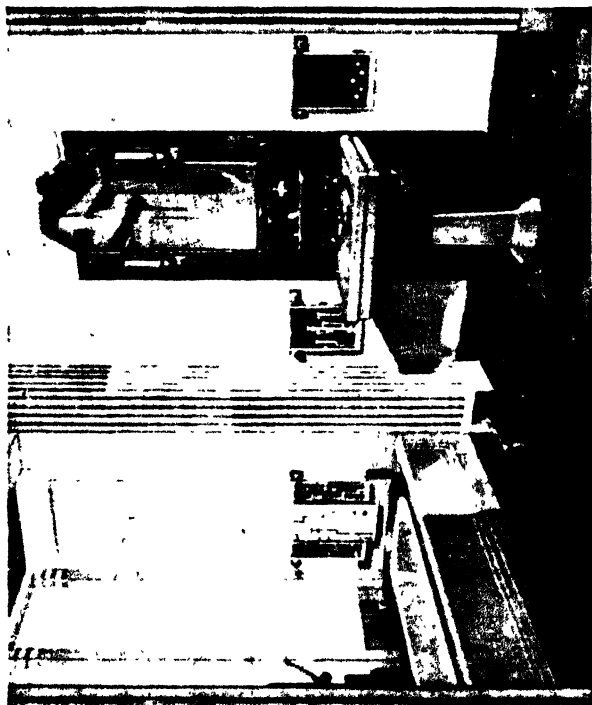
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Introduction

BELIEVING that Engineers, who are called upon to design a country house, would be interested in definite constructive information, an attempt has been made in the following pages to give general data, ideas, and designs. With these thoughts in mind, efforts have also been made to embody and arrange, in sequence, the best available information and knowledge based on practical experience, to enunciate that which is important, and to ignore that which is known to be irrelevant to either design or operation.

The illustrations are intended to show ideas for such designs, and they will afford a basis from which a scheme, big or small, may be evolved. It is hoped that this work will be useful to all those desirous of building houses in country or rural areas, and to all those who are seeking to acquire or to extend some of the amenities of civilization to people anxious to live in the heart of nature with fresh air, and vegetation, but without the discomfort of bad health and sanitation so often found in the country.



NEED FOR A COUNTRY HOUSE AND ITS LOCATION

THE farther one goes from the city, the lower is the value of land to build upon. Now-a-days due to the extensive construction of highways, rail roads, navigable canals, and other facilities for communication, almost all big cities or business centres are very easily accessible from their suburbs for people either in service or in business. Why then is this over-crowding of cities? We build our houses for comfort and convenience. Do we always get them in a crowded city, where fresh air is seldom enjoyed? In a city of artificial environment, nature plays but a very poor part in healing the effects of the rigours of life. The fascination of a country house has very aptly been sung by the poet:—

The gardens lie like emerald isles,
With dewy, tender spouts aglow,
And there are orchard nymph beguiles,
With peach and apple bending low.

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The fields are seas of golden waves,
The vales are green with tassled corn,
The sun and rain like willing slaves,
Store grains with life, this summer morn.

For those who count health in terms of rupees, annas, and pies, I have no advice. What parents and guardians spend on doctors' fees, specialists' tributes, and drugs in a city, I would hate to compute. Please do not misunderstand me; doctors are useful and necessary members of society, but the less you need their help, the more you live in health and plenty.

"I have forsaken the city as a house," says an eminent actress, "My husband and I live in the country. There, while I am playing at the piano, I may take oxygen more quietly than in sports in the city. For I believe we should save most of our energy for our job. I would feel that I were committing a crime and so it would be,—one against my audience, if I walked on to the stage tired. Sunlight and air I must have, and that is the reason I moved

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out of the city." The above remark of a person, whose work must, of necessity, be in the city, is a sure proof that country houses are better than city flats, and that it is not necessary for any individual to live in the city, because the main activities of his life are involved therein.

Few people realise that the energy manifested on this earth comes originally from sunlight. Mighty convulsions of the earth bring cataclysmic changes, and what once had been the surface is often buried to a depth of thousands of feet. Thus coal, oil, and other products are evolved from sunlight. The strength that you possess within your own body is nurtured by the food that grows in the earth and secures a large part of its sustenance from sunlight. These facts should emphasize the tremendous importance of sunlight to the human body. Many people are afraid of the sun. They hide their bodies from it in dark clothes. They shade their faces and heads with large hats. The skin develops a skeleton-like whiteness; and the vitality and vigour that might have been

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possessed from contact with the sun never appear. A country boy or girl may be darker in appearance, but is always healthier in physique. A white skin is not in any way natural. It is a product of the coddling process associated with living indoors, and the habit of shielding the body from the healthy and life-building influence of the sun at all times.

In the dark ages the body was scourged and compelled to endure all sorts of hardship and suffering. All pleasures were tabooed and sinful. The more you suffered during this life the better would be your chances of heaven in the next world. We should indeed be thankful that this unspeakable doctrine has been discarded.

Normal human instincts cannot be entirely ignored without suffering certain penalties. We have a natural love for air and sunlight. In the spring the sun seems to glorify everything. The sunlight is inviting. It has a pleasing warmth, and the temptation

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to bask in its embrace is very strong, especially in winter time.

In the city owing to the so-called unwritten laws of civilized etiquette and decency the all-enlivening sunlight and open air are decorously avoided, and their beneficial effects are, therefore, very seldom taken advantage of, in modern civic life. In the city one lives mostly on tinned food, adulterated drinks, withered vegetables, and denatured fish or meat, while in a country house one can have the advantage of fresh edibles. Fruits and vegetables can be grown in the house garden, healthy fish bred in the tank, poultry nourished in the poultry-shed, and milk obtained from the domestic cow. Apart from the freshness of all food stuffs grown in one's own garden, the owner takes pride in growing them, which affords the inmates of the house ample opportunities of pleasant and untiring exercise in the various operations of the underlying processes.

"As a man cateth so is he," is a truth that should be the motto of every one in the

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country. How many people realise the close relationship between the foods they consume daily and the constitutional disorders from which they are suffering? How many people of to-day even suspect that there is a relation between wrong food and so-called disease? There are very few people, who realise that wrong eating is the starting point of all constitutional disorders, that the soggy, stale, pasty, denatured, devitalised, demineralised, dead, acid-forming foods, which compose the conventional diet of city people, do not replenish the body properly, causing some of the organs to change or alter their functions, the effects of which are called disease. There are many in the city who eagerly learn how to feed their horse, their dog, cat or bird, but they know nothing about the feeding of the human body, and are absolutely unwilling to learn anything about this lost art.

Nine people out of ten—yes, almost ninety-nine out of a hundred are suffering in the city from malnutrition, or faulty lubrication of the system. Ignorance of the

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vital points in living a healthy life is mainly responsible for this suffering; and excesses indulged in by the city population in matters of eating, drinking, playing, and enjoying various amusements lead them to ruin and destruction. If allowed to continue, faulty lubrication of the human system causes serious trouble. Usually constipation pioneers the way to chronic sickness; dullness of mind and irritable disposition are apt to follow in fairly rapid succession. When the mechanism of the body, through which the poisons are destroyed and eliminated, breaks down, it can no longer accomplish its purpose. But a properly and *naturally* lubricated system will not break down so easily, and this lubrication you can easily provide in nature's way in a country house, where you can enjoy at the same time nature's richest, tastiest, and most healthful food.

In villages, even now, we are hearing of persons living active lives right up to the age of nearly 100 years, and these are the people that seldom consult a physician. Nature is

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their guide and teacher, moderation is their motto, and vitaminous herbs and shrubs are their healers. More men in the city die of drinks than of thirst. In matters of health, as in any other, remember the proverb, "who heeds not a penny shall never have any." If you are careless at the very start of any disorder in your system, you will not have any real enjoyment in your life, which is sure to be undermined either by inches or by leaps and bounds according as the power of resistance of the system varies.

Civilization has brought with it problems of all kinds. As soon as we leave the city we feel the necessity for doctors for all our created disorders. In the dark ages when we lived like animals in the country we were blessed with instincts that guided and protected us with a certain amount of accuracy. This innate sense has been greatly dulled by modern environments of the city. Knowledge, therefore, is necessary to solve the problems of this period. And we need it everyday. Every really intelligent individual

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should know how to care for his own body, to keep it strong and vital, with firm flesh, clear eyes, and keen mind. But there are emergencies that come with ill-health when knowledge may actually save life. You cannot always depend on securing a doctor. There used to be a very large number of really intelligent persons in the country who had knowledge and experience of avoiding ailments, and also of curing them in cases of necessity; our town life is mainly responsible for not receiving their instructions in time, and we have thus become entirely dependent on expert advice in putting our homes in order.

The term, 'country life' suggests to the city folks something new and interesting, which the latter incorrectly assume, as very old fashioned and inconsistent with the technical progress of recent times. To one more intimately connected with country life, however, it means a great potential feature more particularly suitable for happiness and longevity.

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To every businessman of the city 'Stock-taking' once a year is an important function. The annual job of making up a detailed account of the goods on hand and the goods profitably sold is the regular practice, and a necessary one to review the past and to mould the future, taking precaution against the items of procedure that are likely to bring in losses. He would not know, otherwise, whether his business was getting on better or worse, whether it was going ahead or going back. Why should not we apply that business principle to our health, which is of no less importance than money? A businessman living in the city often earns an enormous amount only to spend a large portion of it on medicine and doctors, and at a certain stage he may, although, find himself wealthier than the average person, he may have his health shattered for enjoying the fruits of his earning. He may be exceptionally cautious in transacting with his every coin, but is often found careless in regard to his food, sleep, exercise, and lastly in enjoying fresh air. If

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people looked after their health as they do their business, there would be but little need for doctors. If they spend but one-tenth of the thought in conserving health as they do in accumulating money, there would be less than ten per cent of the present amount of sickness and physical inefficiency. Country life will automatically afford an ample opportunity for preserving such health. The reason why there is so much early physical bankruptcy, why deaths during the prime of life are rapidly increasing, is that people do not stop to make a health inventory, do not pause to take stock of that most valuable possession--*vital health*.

How can one make a health inventory? Ask yourself such questions as these:—

1. Have I developed any physical discomforts during this year?
2. Is my digestion as good as it was last year?
3. Can I walk as far, or can I do as much physical work, without fatigue?
4. Is my brain power as good as it was last year?

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5. Do I get up in the morning with the same zest for work?

6. Do I get the same joy out of living?

Be honest with yourself. Ask yourself these questions, and honestly try to answer them. Then ask yourself, 'Am I doing everything in my power to conserve my health, or am I using my physical machine in such a way that it will become worn out before its time?' Thus you may be making an inventory of your life achievement; how much you have lived; how much you have accomplished during the year; whether there has been any increase or decrease in your vital power during the period under review. An average businessman will then find that his living in the city, indulging in unproductive pleasures, attending innumerable social functions without caring for health, and somehow trying to secure money to keep up to the so-called standard, are mainly responsible for various break-downs in his life. Vital force has been totally overthrown by the temptations of city life, without any quiet rest

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or proper physical exercise. Now, therefore, take the help of nature, recede to the country, economise your purse, live an honest life, and trust in Providence.

Now the question arises about the selection of a site for a country house. Preferably a house should be within easy reach of a city by various agencies of present-day communication. The time spent in travelling from the house to the city should not interfere with one's working hours, nor should it be too long to necessitate an unnecessary haste in finishing one's household affairs, especially at the cost of personal comforts telling on health. Moreover, most labour and materials of house construction are cheaper in the city, and in consequence the farther the house is from the city, the more money is to be spent on house building, in carriage of materials, and in arranging for labour.

A golden mean is, therefore, to be struck in selection of the site for a country house. The latter should be well away from the bustle

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of the city in order to enjoy quietness and freshness, but should be near enough for easy communication with the city. If the house owner has his own motor car or other means of conveyance, he should select the site to suit utilization of his own property to go about his business in the city. A willing mind will find no excuse in this direction.

The selection of a site for a homestead should also be considered from a few other points of view. It should not be within three miles or less of a *nikasi* drain, *i.e.*, a drain or a canal carrying refuse of several villages round about, and especially if its water is almost stagnant. Banks of rivers or canals having a regular current of ebb and tide at least twice in a day of twenty-four hours are, however, ideal places for home surroundings. Irrigation canals of most of the districts in India are more or less of stagnant character, and are to be avoided by all means in the selection of sites for country houses. Still waters or waters having a very slight current have been declared by the latest experi-

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mentalists to be the worst breeding places for mosquitoes and larvæ which are the most dangerous carriers of malaria poison. Flies and mosquitoes are the two great pests of nature in India. Flies, known as *musca domestica*, in alternating their flights between the human food and excremental matter, are indirect agents for infusing disease germs, while some species of mosquitoes, known as 'anopheles' directly instil malaria poison into the human system.

So long as dwelling-houses, especially kitchens and dining rooms, are placed at a good distance from filthy surroundings, the harmful effects of flies' nefarious work are easily avoided. To avoid the pernicious bites of malaria-carrying mosquitoes, homesteads are to be located as far away as possible from dirty stagnant water sources, thick jungles and bushes. Tall trees on clean grounds, especially, jhow, nimba, deodar, palm, etc., and well kept fruit, flower, and vegetable gardens have very seldom been found to afford suitable abodes for mosquitoes. House tanks or swimming baths in country houses, advocated

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in later chapters, must be kept clear of all weeds and shrubs along their banks to keep off mosquitoes. The author has experience of districts in Bengal, where there are large numbers of tanks or ponds which seldom breed malaria mosquitoes. Abundance of clean fish in tanks, besides affording an amusing pastime for anglers, is, perhaps, a great help in keeping mosquitoes from breeding larvæ due to constant disturbance of water surface near the banks where they are prone to spread their beds.

Above all, right living at all times, even when feeling in the very best of health, is the keynote of avoiding attacks of diseases from extraneous sources. All poisons from within or without, must be either eliminated or neutralised by the vigorous actions of healthy living. The six cardinal points in right living are proper diet, exercise, breathing, bathing, sleeping, and thinking. It is difficult to say which is the most important, as each depends upon, and helps the others. One thing is certain, however, that without a

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proper balance amongst them, the best of health and immunity from disease are impossible.

In the low-lying districts of Bengal where the subsoil water-level during the monsoon is within a few inches of the natural ground-level, care should be taken to select a site for a homestead having the same at least 6 feet below the ground all the year round. The raising of the ground to a desired height can, however, be accomplished by spreading the soil dug out from a tank excavated at a suitable place within the boundary. The foundations of the proposed buildings on such grounds should, in every case, be carried below the new layers of earth to avoid sinking of the structure due to subsequent settlement of the made-up soil.

There are certain people who, afraid of catching cold in the country especially in cold weather, would be unwilling to substitute a country life for city conveniences. For them I do not like to prescribe a specially selected site on the above score. I do not believe,

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in common with all sane doctors, that cringing from the least bit of cool air either indoors or out, has ever improved the constitution of persons of that turn of mind. There are millions of them who remain in a miserable state during five or six months of the cold weather, and are no better off the other way during the rest of the year in the hot season. A real cold weather, I mean a very severe one, is not so desirable of course, but one cannot get rid of it unless one selects his country house in a warmer place. In making the best of an unusual cold weather, however, my recipe would be one of enjoyment. When I speak of enjoyment, I do not necessarily mean participating always in winter sports if one is not inclined due to age and habits; I mean you will find enjoyment in the fact that you can pit yourself against cold and even stormy weather and beat it, instead of shivering and cringing from it. In beginning the hardening of the body you must use discretion and not rush out into the cold in summer attire. You are hardened by the right frame of mind

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regarding cold weather and by gradually exposing yourself to the rigours of cold weather, instead of avoiding them as much as possible.

Even though we are surrounded by more disease in the winter than in the summer, the cold weather is the healthiest. It is not the cold weather that actually causes disease, it is the poor condition we get ourselves into by trying to shun it. We stick ourselves in overheated rooms so much of the time that when we do go out, our resistance is so weak, that we are easily susceptible to colds. I have some acquaintances who will shut up all openings of their rooms, even ventilators, during a cold weather night, and would be naturally very poorly off next morning when they come out in the open.

In summer the air is more laden with impurities than in the winter time. The impurities of the air are more numerous than you may think. Substances to be found in the air are sand, dust, soot, pollen, particles of food, and clothing, and various micro-organisms.

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Besides these, there are gaseous impurities such as carbonic acid (whenever it exceeds 0.05 per cent), carbon monoxide, sulphur dioxide, and other gases. In the winter we have less dust because the ground is harder, and dust cannot be blown from its surface so easily. Then, too, in the hills we have the snow which also prevents the rising of dust and other impurities of the earth's surface. To you, who have occasions to go to Simla or Darjeeling in the beginning or the end of a winter season, when venturing forth in the morning, how clean, pure, and invigorating the air is felt. Furthermore, we have some heavy downpours of rains in the winter in some parts of India, and rains are a great asset to personal health. Not only do they purify the air, but do much to wash out the impurities on the earth's surface. The winter air being fairly dry, humidity after a shower of rain is quickly dispelled, and very little chance is left to the right-minded man to catch cold in such weather in winter, although it appears paradoxical to a layman.

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When you are in the country, make it a point to get outdoors more than you have been doing in the city. Do not go out without sufficient clothing and do not bundle up excessively either. Do not go from a warm house to the cold outdoors with the same amount of clothing you wear in the warm house. Rapid lowering of the temperature of the body causes cold and disease. But you will ask how the cold weather can be healthy when it causes these colds and other diseases? My answer to this will be by another question or two. Does cold weather always cause cold to everybody? Do we not often catch cold in hot weather? Do the people in the hills suffer very much from cold? The reason is simple and the same in all cases. In our system there are always germs, and when our resistance is good they can do little harm, but when this power of resistance is poor or weak, all that the germs require in order to enable them to start something, is the rapid change in body temperature just mentioned.

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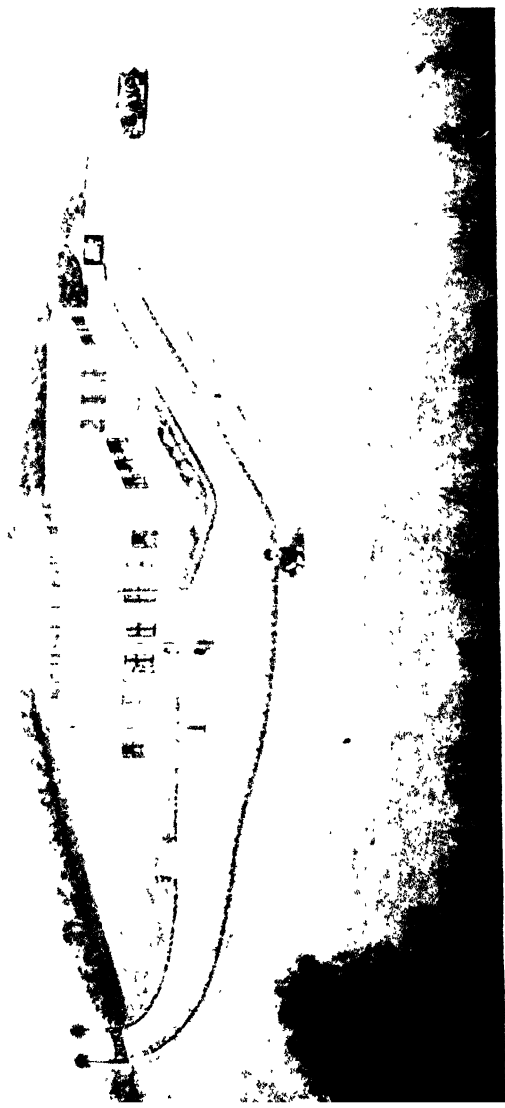
The winter hardening process will cure any apprehension of leaving the city for a country life, without the least change in the selection of site for the house. Keep outdoors as much as possible as the weather changes from warm to cool and from cool to cold. Try to find time to walk in the cold or get into many winter sports if possible for you. It may be impossible for some to indulge in sports, but walking in the cold in suitable attire is in the hands of all. The big idea in this hardening process is to get outdoors, as I said before, going in for any form of exercise while out, that will make the blood flow freely. Another slant on this idea is to go out and fight the cold as it were. You will find joy in this accomplishment as well as health. You can begin the hardening of your system before the cold weather sets in by indulging in cold outdoor baths, of course, when the outside temperature is high and there is a bright sun. If you are not accustomed to cold baths, you should proceed gradually. If you are one of that singular

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type of men who simply cannot stand cold baths, then you should not try them. You should first take a tepid shower or bath and gradually change the temperature to cool or cold. Keep this practice up all winter although you may have to modify the temperature of the cold water until you get fully used to it.

Indoor air in winter time cannot possibly be entirely pure. Think of this the next time you have been sitting in the house all day, and consequently feeling sleepy and tired. Also remember that one man requires 3,000 cft. of air every hour in order to keep the air he breathes pure. How can a tightly closed room supply that quantity every hour?

This is a great digression, but it can be easily supported when I relate to you that an old acquaintance of mine refused to shift from the city to his country because he thought that he would die of cold there in cold weather. A country house can be equipped with the conveniences of the town, especially hot and cold water supply as cheaply, if not cheaper, than in city flats.



View of a Country House

DESIGN AND CONSTRUCTION

EVERY community and every individual with a semblance of progress is now engaged in one form or other in constructive investigations and improvements. This is an age of new things. Present progress is just the beginning of what may be anticipated in the direction of designs and constructions according to modern ideas. It is, therefore, very difficult to define set rules and regulations for people of different ideas and professions for the construction of a house to live in. But my task is much simpler than that of an architect for city construction often under limited time and space. Some of the predominant features of a country house are the outcome of a love of nature and a craving for fresh air and vegetation. A country house design in general will, therefore, be based principally on the following lines:—

- (1) Plenty of open spaces all round.
- (2) Fruit and flower gardens.
- (3) Swimming baths or fish tanks.
- (4) Sufficient play-grounds.

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- (5) Proper accommodation for domestic animals, especially cows, goats, fowls, ducks, etc.

There are other very vital points to be considered for health and sanitation as well, and these are mainly drinking water supply, and proper sewage disposal. Open tanks, however big they may be, are never immune from pollution through extraneous sources, and the water from such tanks is not, therefore, always recommended for drinking.

The introduction of deep tube-wells, for the last two decades, all over the country has solved one of the greatest difficulties of drinking water supply. A deep tube-well should be an indispensable adjunct to a country house. The last, though not the least, is to design a suitable system of sewage disposal. It is not always possible to get the services of sweepers in the country nor suitable sites for dumping grounds. An automatic method of disposing of lavatory and kitchen waste in a country house should be an essential feature. To add to the

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comforts and convenience of residents in the country small electric plants may be installed for lighting and pumping water for gardens, bathrooms, and kitchens. A refrigerator may be added to the other concomitants of country house comforts.

The proper design of a house in the country is very little different from that in a city except that the general view of the latter is to be dependent mostly on heights while that of the former on lengths and breadths. A city building due to congestion has got to be raised more than one storey (usually several storeys) while a country house is quite comfortable with the required number of rooms on the ground-floor only, and the general aspect can be heightened by gabled or pent roofs.

All living rooms for a country house should be designed to face the prevailing direction of the wind and the plinth level should be fairly high, say 4 feet from the finished ground level; walls of rooms for a single storied country house with gabled roof may be raised only 9 feet above the plinth, and

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Lay out Plan of a Country House

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the eaves may project about 18 inches from the walls. The slope of the roof should not be less than 1 in 2 for an attractive feature. Projections for bay windows, porticoes and passages with introduction of different sloping roofs will always relieve an observer from the monotonous effect of the long inclined covering. There should be a separate block of houses fairly away from the main building and connected therewith by means of covered passages, for the accommodation of kitchens, servants' quarters, pump houses, etc. Garages, cow-sheds, and poultry-sheds should be constructed furthest from the tanks, wells, and play-grounds.

At the beginning of this chapter is a general view of a country house which has been accommodated in an area of two and half bighas of land. This could be reduced or enlarged according to the means of the owner, and the needs of the residents. The layout plan of a country house with lawns, garage, and outhouses is shown on the left page. The author does not claim

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this to be an ideal plan for all classes of people, but this is a design, the accomplishment of which is within the means of most house owners in the city.

The essentials of human life are food, water, and air. We can live 40 days without food, 10 days without water, but less than 5 minutes without air. The latter, therefore, is the most vital element to our existence. Normally we breathe 34 pounds of air each day from which we receive 60 per cent. of our energy, as compared with 4 pounds of food, and 4 pounds of water. Air may, therefore, be considered the proper life-giving factor for the existence of all animals, and if this air is vitiated or impoverished in its proper life-giving properties our energies will fail, and longevity will be curtailed. So long as we shall live in polluted air, we shall lose the charm of life, and our souls will carry our bodies as an engine carries a goods train without feeling for the latter.

In response to a constantly increasing demand for fresh air, I have the pleasure in

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synopsising my views about the country house, which I consider to be the saviour of present day congestion of the city which yields, as reported by doctors, innumerable cases of tuberculosis or the sure killer of humanity by inches.

The constructive part of a country house differs but little from that of a town building, except that in the former no municipal regulations are to be followed in the matter of side spaces, back angles, etc. Materials of construction may also be different in the two cases. City regulations are mainly to guard against accidents from fire and a consequent conflagration in certain quarters, where houses are thickly situated, while country houses are so few and far between that no such handicaps are necessary. According to means and circumstances a country house may be built of anything from thatch and mud walls to magnificent stone and concrete materials.

Having opportunities of whole day excursions in the country except in the rains, very much less accommodation is necessary

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inside the house than that required in a city building, the main idea of living in the country being fresh air and vegetation. A distinguished friend of mine happened to have a holiday home in the hills. The only accommodation he had in his big house on an acre of land was a big hall, 40 feet by 30 feet, a kitchen 20 feet by 15 feet, and two bathrooms 10 feet by 8 feet each. The peculiarity in the hall was a number of hanging berths from the walls on one side and the rest of it was practically empty except for a few removable pieces of furniture. The berths on the walls were similar in appearance to those in railway carriages. I was struck at the poor show of the house, but my friend was equally quick to perceive my embarrassment. He said "this is a holiday home; plenty of fresh air, play and games are all that are essential for revivification. There are folding berths in the hall for resting at night. We are practically all day out in the gardens. When I am playing, I virtually lead the life of a recluse. When I am here,

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I do not go to parties or any social functions. I take every opportunity to rest my mind and body. Don't think I rebel at this sort of life. On the contrary I believe the simpler the life that you lead, the more sun and air that you get, the happier you are. What more do you want in a holiday home?" and he laughed. I could not but admire the spirit of his actions, and this is the spirit that should pervade through people wanting to live in the country. If you have enough to spare, build palaces to your liking.

Different materials of construction are gaining ground with the progress of time, and they are not always very dear. An architect was telling us over the dinner table the other night,—the last few years have brought about the greatest changes in home equipment that any comparable period has ever seen. He said that new materials and appliances, under test a few years ago, have in most cases won their place. Still newer products are crowding forward for attention. These new materials of construction can

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profitably be utilized for country houses, as they in most cases relieve the house owners from the monotonous constructions of the city.

A model country house shown in my design at the beginning of the chapter is supposed to be constructed of reinforced concrete throughout, walls and roofs, and the floors are of artificial stone. The country houses, however, may easily be built of common building materials available in a particular locality. I have seen houses in the *Santhal Purganahs* built of mud walls and thatched roofs which are equally comfortable for living. Common materials for construction of walls in India, are stone, bricks, cement concrete, mud, *hogla* (a kind of common shrub in Bengal), *ekra* covered with mud (prevalent in Assam), split bamboos, wood shingles, modern celotex, fibre boards, ply wood, etc. Roofs are usually constructed of tees and tiles, wooden beams, burgahs and tiles, reinforced concrete, corrugated iron sheets, asbestos sheets, wood shingles, roofing tiles of various patterns and sizes,

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straw, *golpatta*, cocoanut leaves, and so on. Doors and windows are usually of different kinds of wood, and they are sometimes made of the same class of materials for walls in comparatively poor houses. Having no municipal or city restrictions in the country, houses may be constructed of any of the materials enumerated above. Climatic conditions of a place have taught people to build houses of materials most suitable for a particular country. Some amount of eye-survey over the surrounding houses will easily indicate to an observer the kind of material used in the construction of the local houses. According to the funds available, cheap or dear materials may be chosen for a proposed house. Many country houses are seen with buildings which may be looked upon as the acme of perfection with various kinds of building materials of old and new productions. In conclusion, let us realise that all those entering upon or actually engaged in the construction of country houses should consider about the magnitude and importance of the undertaking

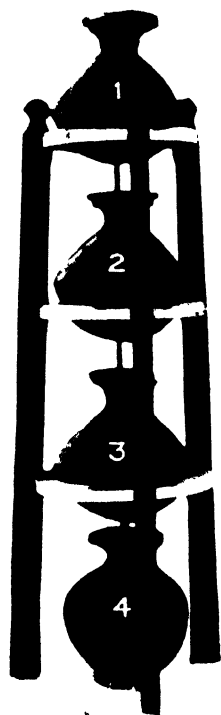
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in relation to the means available for the purpose of deciding on the materials to be used. For the general design and arrangement an expert may be consulted and his views, properly modified, should be made to coincide in some respect or other to finally accomplish the project.

The enormous increase in population and crowding together of masses of people in small areas of the city have made the designers' and builders' work very complex. On two cottahs of land in a town you are probably required to construct a three-storied building occupying nearly two-thirds of the ground area. When the foundation trenches are dug up, you do not find rooms for keeping your surplus soil, not to speak of stacking other materials of construction for the work. In a country house we do not think about this kind of congestion of space. There is a decided trend in city people now-a-days to shift from town and considering the large number of country house schemes on different lines, that will be demanded from designers

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when the real need will arise in the near future, no apology is needed for excluding anything of a concise nature on constructive designs from this small hand-book. This will, I believe, prove of real assistance in inducing a change of views to begin with, and may help budding Engineers to direct their attention to country house designs. The primary object of this work, however, is to point out the dangers and pitfalls which certainly lie in the track of change from the city to the country. A plain statement in plain language is the object of this book, with the addition of such educative matter as to enable the lay reader to fully comprehend the situation and to be convinced of the utility of change.



View of a domestic filter

WATER SUPPLY AND SANITATION

I HAVE already said that after air, water is the next important thing for existence. Care should be taken to get a good and pure supply of water in the country. We need water for our food and drink; for our personal cleanliness, for domestic purposes, such as washing, cooking, cleaning household utensils, floors, etc., for cleaning drains, sewers, water closets, baths, lavatories, urinals, sinks, and so on; for extinguishing fires, watering streets and gardens, and for cows and other domestic animals.

Water is an active agent in the spread of disease. It may safely be assumed that there are few natural sources on the surface of the earth that do not receive a perceptible amount of sewage, drainage or waste, resulting from human and animal activity and habitation. Now the experience of the human race has shown that many of the natural bodies of water are used as sources of water supply by a considerable population without any strikingly noticeable injurious effects. If all

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the dangerous elements or to put it more specifically, all the pathogenic bacteria, entering bodies of water, remained there in their original numbers without change, it needs little imagination to picture the difficulty there would be in obtaining a supply of even moderately wholesome drinking water. We know that this is not the case, and it is apparent that in nature some sort of change occurs, which results in the destruction or disappearance of the offensive and disease producing elements that are introduced from time to time into most bodies of water. It has been cunningly said that what is wanted in food or drink is innocence rather than repentance; but it must be remembered also that few people are in a position to obtain a virginally pure supply of water. In practically every civilized country the rivers, large or small, receive the sewage or drainage of a more or less extensive population; and the same is true of tanks, ponds, wells, etc. The most common of the dangerous infections which are attributable to the pollution of water

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supply, are diarrhœa, cholera, and typhoid fever, and a study of the occurrence and behaviour of these maladies should be of great interest to the sanitarian. All attack the digestive tract or channel, but the former two are much more rapid in their development and more deadly in their effects. It has been the cause of many serious epidemics in various towns and cities, in country fairs, and pilgrimages. Some sort of treatment of any source of water known to be fairly clean may have to be adopted to guard against the dangerous ailments referred to above. Thorough examination of specific sources of water supply especially for drinking and cooking purposes will bring to light the causes of trouble, and proper remedies should be adopted to purify the sources.

For a country house supply it is desirable to have one or all of the three sources according to the means available, namely, a tube-well, an open well, and a fairly large sized tank or pond. A tubular well is sunk in various ways depending upon the size and

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depth of well and the nature of the different layers of strata it has to pass through. To furnish a good pure supply of water from a tube-well, in addition to the question of sinking the tube, its location is very important for obtaining a sure supply. In lower Bengal there is very little difficulty in finding a suitable spot to sink a well. In fact I have not heard of any tube-well in Bengal, which has failed to supply a good quantity of water from a reasonable depth. The cost of sinking a moderate sized tube-well in Bengal, say $1\frac{1}{2}$ inch to 4 inches in diameter is fairly cheap now-a-days. The well tube consists of a few lengths of wrought iron pipes, preferably galvanized, closed and pointed at one end, and perforated for some distance upwards therefrom. The method of sinking these tubes can very profitably be left to the experts who will be the best judges for ascertaining the proper depth, a tube is to be sunk into, to get the desired supply of water. The water from this source is to be pumped up to the surface and can be

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utilized for all purposes provided it is stored in a clean reserve tank at a fairly good height capable of supplying water all over the house. The means of distributing this reserved water is a piped system with taps at different points.

An open well comes next in importance in a country house. For the sake of economy, it is not always desirable to pump water for all purposes, especially for washing, gardening, etc. Water from an ordinary open well sunk to a suitable depth to get a constant supply may easily be raised by means of buckets, ropes, and pulleys for the usual domestic use. These wells, called shallow wells, may be seen all over the country, and their utility cannot be gainsaid; although in most cases water from these wells is not quite suitable for drinking purposes, unless proper measures are taken by means of house filters or otherwise to filter it for drinking. Trouble is often experienced in these wells of shallow depth, through clogging, evaporation or excessive drawing in the way of shortage of water in the dry season. This is largely

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avoided in a well of larger diameter and bigger depth.

Thirdly a large open tank dug in the ground to receive an enormous quantity of rain water directly and from surface washing is of great value in the country. These tanks are seen of various sizes, an average one being 150 feet long, 100 feet wide, dug to a depth varying from 15 to 20 feet from the ground level. Each of these tanks holds a large quantity of water throughout the year in some districts, while it is found to be dried up for three or four months of the dry season in some other districts. The cost of digging such a tank in the country repays itself admirably in utilizing the earth dug out therefrom for raising low lands and preparing gardens; mud walls of houses may be built of the same stuff. These tanks can be used as swimming baths, and they are excellent homes for fish. The water from such tanks is not usually potable unless filtered, but it may be utilized for all other domestic purposes with greater advantage. Suitable

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masonry steps built on one or four sloping banks of a country tank may afford an easy access for bathers or household servants. Fishing or angling is a pastime that may be enjoyed in a tank of the above description.

When it is not possible to go in for all the aforesaid means of water supply in a country house, one that can be easily arranged to suit one's pocket, may be constructed, and some suitable domestic filters used for filtering the well or tank water for drinking purposes. For filtration of drinking water a large number of different house filters has been devised, but many of these are so inefficient as to be worse than useless, for it not unfrequently happens that the possession of a filter leads the consumer into a state of false security. One commonly used all over India from ages past is really an efficient filter for domestic use, provided it is cleaned periodically. It consists of four earthenware jars, one on top of another placed on a tripod. (*Vide* picture at the beginning of the chapter.) Boiled water is to be poured

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into the No. 1 jar; No. 2 and No. 3 are filled with charcoal and sand in order. There is a hole at the bottom of each jar except No. 4, or the last one which receives the filtered water. These holes are provided with cotton wicks to enable water to come down in drops, so that sufficient time is allowed for water to be filtered in the filtering media of charcoal and sand. Boiling kills all micro-organisms, charcoal removes the dead organic matter, and sand acts as purifier for suspended solids and removes the insipidity caused by boiling. Due to evaporation through pores of the jars the water is kept cool for drinking purposes. These filters need periodical cleaning, say once a week, and their capacity may be adapted to suit the number of users. A good plan is to keep two such filters in a house for alternate use, so that no inconvenience may be felt when one is left out of commission for cleaning and drying.

As regards sanitation for a country house, one is mostly concerned about the suitable

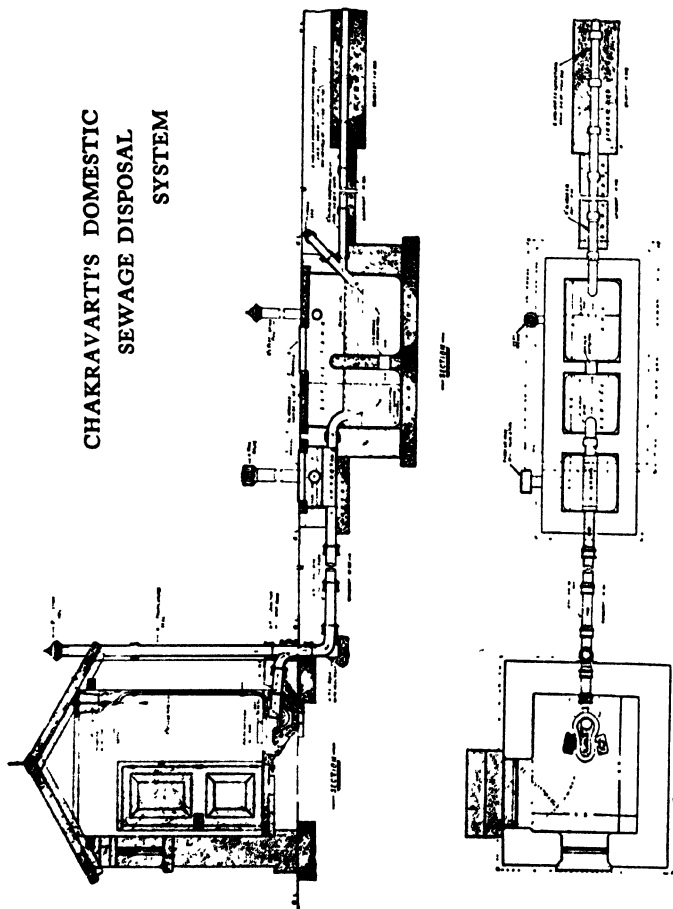
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disposal systems of different kinds of wastes from the house and storm water during the rains. House garbage is the general term for all ordinary wastes from dwelling houses. It is divided into three classes: (1) dry ashes, dust, food scraps, waste paper, tins, bottles, etc., (2) excretal liquid, and solid excremental matter from men and cattle, (3) waste water from bathing, cooking, washing, etc. In dealing with the removal of house garbage, it is imperative to learn thoroughly the chief procedures which must be carried out to insure success, *viz.* (1) it should be removed immediately after it is produced, (2) it should be removed without causing a nuisance.

Lavatory wastes now-a-days can be disposed after the water carriage system in very many ways suiting the nature of the soil of the house and the circumstances governing the situation. I have been personally successful in a very simple method of sewage disposal for country houses almost all over India, and up till now there have been at least 4,000 installations carried out under my guidance

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CHAKRAVARTI'S DOMESTIC SEWAGE DISPOSAL SYSTEM



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on the same principle, and all these installations have met with success for the last fourteen or fifteen years. The accompanying drawing is a fair representation of my novel method of sewage disposal in the unsewered area of a town, or the best solution for a country house with a limited number of persons.

This system of sewage disposal is intended for the treatment of sewage from isolated bungalows or groups of bungalows and consists of totally under-ground liquefying tank with submerged inlet and outlet, porous distributing pipes surrounded with percolating cinder or *khoa* beds. Liquefaction accompanied by purification commences in the double chambered under-ground tank through the action of the anærobic bacteria, the growth of which is promoted by the water seal airtight cover provided on the top of the tank.

Human excreta has been found to contain on an average only about 5 to 7 per cent of solids after the proper action of liquefaction, and most of these solids again are intercepted in the first chamber of the so-called septic

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tank known as the grit chamber. In almost all cases proper septic action in an anærobic septic tank is completed after the latter has been in continual use for nearly three months, and after the lapse of these three months a distinct scum has been observed to be formed on the liquid surface of the inner contents and this surface again after a few years hardens into an almost impervious layer of thickness varying from a few inches to a foot. In order to avoid obstruction of passage of the liquid effluent to run into the agricultural porous drains, after the septic tank, the inner mouth of the outlet from the second chamber has been designed to be situated about a foot below the liquid surface of the tank.

The agricultural drains of porous pipes surrounded by cinder beds, laid in a slope of 1 in 200, are left unjoined for easy discharge of liquid at different points when there is a rush of liquid due to simultaneous use of a number of latrines connected with the system. But usually this liquid flow in the discharge pipe extends over a considerable

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distance, slowly percolates through the pores of the pipes, and gets absorbed in the soil after passing through the surrounding filter bed. Thus the level of the tank is kept constant without any chance of overflowing, unless the level of the subsoil water rises up above the bed of the agricultural pipes. The idea of a sufficiently thick surrounding of clean cinders of about one inch in diameter is to increase the percolating area for the liquid effluent; and the bed of porous pipes being within 3 feet of the ground level, percolation extends through the cinder bed quite near the surface of the ground allowing a large portion of the liquid to get a chance of being evaporated during dry weather. The top layer of cinder is covered with some kind of slabs, preferably roofing tiles, spanning the whole width of the trench to prevent earth on top from clogging the porosity of the underground percolating bed of cinders. The length of this percolating bed has been determined by experience, and it is generally sufficient to provide 5 feet of trench for every

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user. The whole of the system, being completely hidden from view, obviates the sentimental difficulty usually experienced in open filter beds. In fact, unless the spot of this sewage disposal system is pointed out to a stranger, he would neither know its position nor hesitate to walk over the grounds with a preconceived idea. The ground on top of the percolating bed becomes highly fertile and affords suitable beds for flowers, vegetables, etc.

The tank is designed for 25 years' use to begin with, but it can be utilized over again by emptying the same through the manhole provided on top. This system has been adopted with success by many public bodies including Military Authorities, Public Works Department, Municipalities, District Boards and various owners of country houses and tea gardens.

To sum up, this system claims the following special advantages over many other systems in use:—

(1) No danger of foul gases to pollute the atmosphere.

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(2) No chance of contaminating wells, tanks, or other sources of water-supply provided it is installed at least 25 feet therefrom.

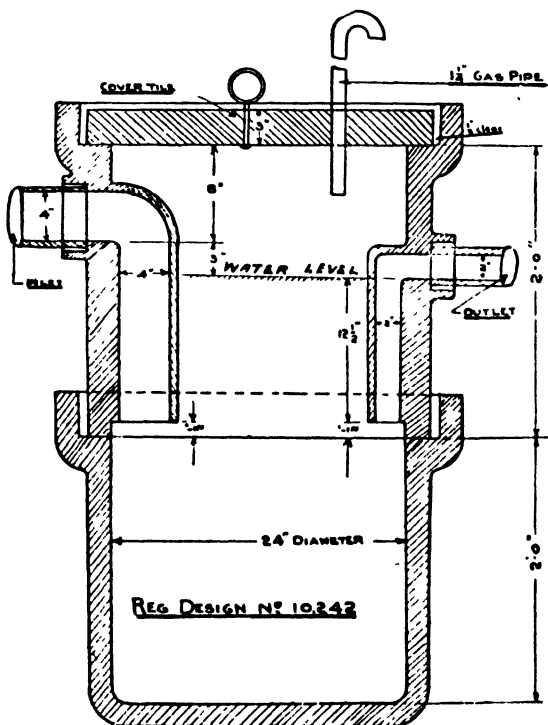
(3) It can be installed within a few feet of a dwelling house without the least chance of affecting the health of the inmates.

(4) Nothing unsightly to work against a person's sentiment, in fact nothing is visible on the surface of the ground.

(5) Simplicity is the keynote of the design, and no attention is necessary for its upkeep.

There is one more special advantage in this system of sewage disposal that a certain amount of disinfectants may be used in the bathrooms or outside, if necessary, and they will not interfere very much with the working of the system, as the effluent from the liquefaction tank is allowed to pass unobserved and has the chance of being filtered through a considerable thickness of soil.

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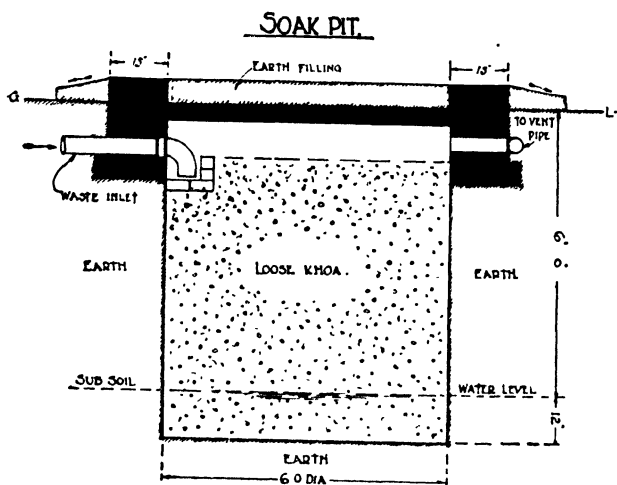
SEPTIC TANK STONE WARE BURN & CO. LTD.
RANEGUNGE.

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There are various other systems in use of which mention may be made of *Burn & Bates' Tank* of stone-ware, depicted on the left page, which has also been used by the author with success for a small number of users, adopting the same underground percolating beds as in the previous system.

Next in importance is the disposal of kitchen and cattle shed wastes in a country house. The best and the cheapest method of dealing with their liquid part is to dig some soak pits under the ground sufficiently deep to nearly touch the usual sub-soil water level, and fill them up with different grades of *khoa* or cinders varying from 2 to 1 inch in diameter, and build round the top of an individual pit with 15 inches of brickwork to 6" above ground level. A reinforced concrete slab or any other covering may be suitably placed over the pit and about 6 inches of earth put on top of the cover with a proper slope towards the ground all round, so that there may not be any collection of rain water

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on the pit itself. A suitable section of a soak pit is given on the left page for easy reference.

The solid wastes from kitchen and other sources, such as dry ashes, dust, food scraps, wastes papers, tins, bottles, etc., may be deposited or trenched in a dry pit. Dung from cattleshed may be profitably utilized by turning it into cakes and drying them in the sun for fuel, such as generally observed in villages and bustees. Some of the many objections to the fixed ash pits, or dumps, as they are often called, are that they are located in unfavourable places and are often unsightly. They are likely to have slops thrown into them, and in consequence the contents putrefy and often soak into and around the house. Precautions must, therefore, be taken for construction of similar dumps or soak pits as mentioned before for the disposal of liquid wastes of kitchen and cattleshed.

The following regulations will be of great assistance in avoiding any bad effects:—

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(1) They must not be constructed within 6 feet of any dwelling-house.

(2) They must be at least 50 feet away from any domestic water supply.

(3) They must be provided with proper ventilation pipes.

(4) The top of the pit should be at least 6 inches above the ground level.

(5) No individual ash pit or dump should exceed 50 cubic feet in capacity and when one is filled up the same should be levelled, covered with earth, and the ventilation pipe used for the next one to receive a fresh load.

To avoid continual changing of pits, incinerators may be installed for burning the solids at greater cost. These incinerators again are to be located at the extreme end of a country house so that there may be the least chance of temporarily contaminating the atmosphere during burning; of course, the residue from destructors is practically clinker or slag which may be profitably utilized as aggregate for road making, or ground to

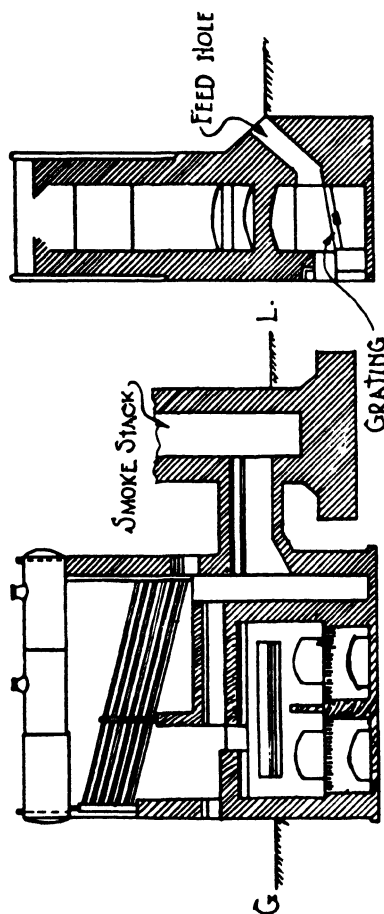
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proper size, it may be used with cement for concrete floor or roof and sometimes the softer stuff is powdered and mixed with lime for lime mortar.

An incinerator after the design shown on the next page may be conveniently installed close to the dwelling-house with a well designed long chimney and the heat generated by burning the refuse may be utilized for warming water for bathing or washing purposes. The hot water cylindrical tanks shown in the sketch must be automatically fed by pumped water to serve the purpose. An ordinary domestic hot water boiler of modern design may also be used as an incinerator for burning solid refuse of a country house. With the help of an additional hot water cylinder this system is ideal in its use and operation. A diagrammatic sketch of a domestic hot water system is given in page 62 for reference.

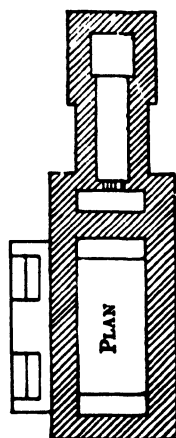
All hot water is derived in the house from the heater or boiler, and if one wishes to obtain

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CROSS-SECTION.

LONGITUDINAL SECTION



INCINERATOR
for burning refuse and
warming water

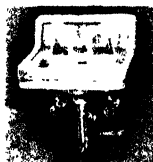
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successful results, one must use discretion in selecting an efficient type for the varying conditions under which it will operate. It is essential in most systems to provide some means of storing the hot water, as the heater is never of inexhaustible capacity to yield hot water at any time and in any quantity. In a domestic supply hot water is stored in a cylinder, shown horizontally on the right of the boiler at a higher level. The hot water cylinder is, first of all, fed by cold water from the cold water roof storage tank, and a pipe leading from the cylinder feeds the boiler at a lower level and the hot water pipe from the boiler at a higher level supplies the hot water into the cylinder, which, in its turn, supplies the different fittings of the house at different floors below the roof storage tank, with hot water. The pressure of hot water is, therefore, derived from the height of the roof tank which must be fed by pumping or otherwise to ensure the supply on all the floors with both hot and cold water. There is a pipe leading from the cylinder to a point above the roof tank,

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The most efficient and
economical Hot Water
Supply Service

DIAGRAM
showing typical arrangement
of
Hot Water Supply Installation
Constant supply all over the
house



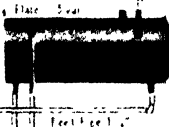
For Water Basins
Hot Water available when
wanted



Always Hot Water
For your bath



Cold Water
Supply Pipe



Hot Water for
Kitchen use



IDEAL
Domestic Boiler
No. 4 D

Also various other
sizes according to
requirement



Domestic Hot Water System

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preferably back over the latter. This pipe is known as the expansion pipe and it prevents accidents in the system due to overheating and helps the proper circulation of hot water through the system.

Rain water can be disposed of by means of surface drains to a tank or pond or any low land neighbouring the house. Bath or wash basin wastes may be similarly treated.



BATHROOMS AND KITCHEN

IN this chapter I shall be indulging myself a little on the importance of hydropathy in physical culture. For many centuries hot, cold, and tepid water, together with hot and cold mud baths, have been used by all people, both aboriginal and civilized, in the cure of disease and the maintenance of health. Water by the ease of its application in a variety of ways, so readily helps forward the simple and natural processes of the body that it is recognised as one of the most powerful agents in the hand of those who seek to supplant weakness and disease with strength and radiant health. It must never be forgotten that although water is a most simple and natural remedy, it is one of the most powerful agents known to mankind. Every person is familiar with the effect of cold water upon the muscles. A whole volume can be written on the application of cold water to facilitate the natural functions of the body.

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Bathing is of value as a means of cleanliness on the one hand, and on the other as a tonic. The old saying that "cleanliness is next to godliness" is very significant of the great truth that external cleanliness, apart from its value for its own sake, has a great deal to do with the purity of the blood and general internal wholesomeness. The amount of bathing necessary for a person will vary according to his diet and habits. If the diet is clean and favourable to a perfectly pure condition of the blood, and if one's internal condition is wholesome and normal, then there will be no excess of wastes to be eliminated through the skin. Our Hindoo sages have prescribed a different number of baths to people of different habits, and occupation, evidently considering the necessity of bathing different for them for the sake of health.

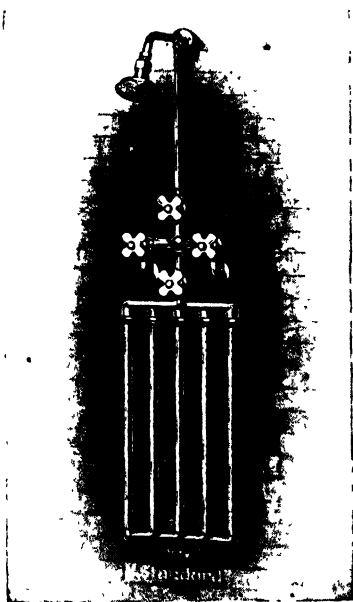
For growing boys and girls especially at the approach of puberty, the cold bath is beneficial, inasmuch as it stimulates all normal functions and promotes all healthful secretions. By its action, it will largely

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destroy so-called "growing pains" and at the same time prevent the establishment of nervous conditions that so often become established through want of proper attention at this period.

Doctors are unanimous in acknowledging the efficacy of baths for all classes of patients, their recipe varying as regards the temperature of water for different needs.

The douche or shower bath like the one on the right is where one or more columns of water are directed against some portions of the body. The douche is again subject to three controllable variations, namely temperature, force or pressure, and amount. The douche or



Shower or Douche

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shower bath is essentially stimulating, combining both thermal and percussion effects and is one of the most powerful agents used in hydropathy.

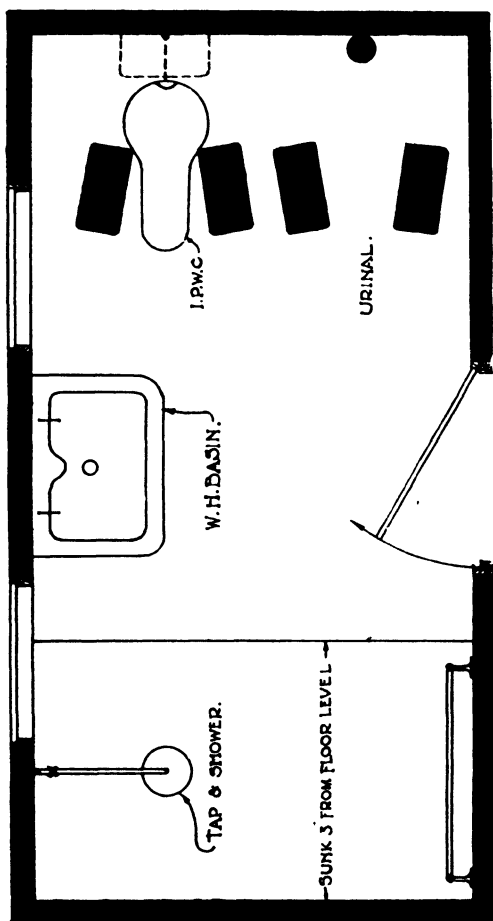
I have already said that an open tank or a pond in a country house for a swimming bath is very necessary. It is a good idea to have one or two showers fed by some overhead tanks installed near the bathing steps in a tank. A bather will do well to have his preliminary bath under a shower before he plunges into the tank for swimming which is a delightful exercise operating all muscles of the body, developing strength and symmetry.

A closed bathroom should also have a shower in addition to a tap for bathing. Most of our Indian ladies prefer to have their baths indoor, and it is for them these inside showers are more necessary than for those that will readily dive into a tank for bathing. Hot or tepid baths are seldom recommended outside, far less a steam bath. A regularly equipped bathroom is, therefore, very necessary for various reasons. Sun baths

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are to be preferred to hot baths, because the former not only improve the elimination through increase of perspiration, but they also add energy to the body, and improve internal nutrition, and are, therefore, of great help in building vitality. A sun bath is nothing but getting oneself exposed to the sun with or without any garments to suit one's condition of life. Hot water baths take away energy, to some extent, but sun baths bestow it. Because of the value of sun and air on the skin the clothing should be as light and porous as is consistent with warmth. The windows of a bathroom may be so arranged that a certain amount of morning sun can always play inside, so that a sun bath may be enjoyed inside the room without much exposure. A most ordinary bathroom in Indian style, like one shown on page 70, should have a tap, a shower, and waste arrangements for wash-out water. Now-a-days a W. C. basin is often included in the bathroom with or without a partition to separate it from the rest of the fixtures. A separate squatting urinal with two

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An ordinary bathroom in Indian style

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foot rests only is preferred by Indian ladies as they seldom use a W. C. for urinal. A wash-hand basin is a very convenient fixture in the bathroom for washing the hands and face without wetting the feet. Call it a luxury or a necessity, an average middle-class man will like to have a tap, a shower, a bath tub, a wash-hand basin, a water closet, and a urinal in his bathroom with a few accessories, such as towel rails, mirrors, shelves, etc. An elaborate bathroom in Indian style is shown on page 72. The design is copied from one recommended for a nobleman in Nepal and it was liked by him immensely in preference to many other designs made by the author.

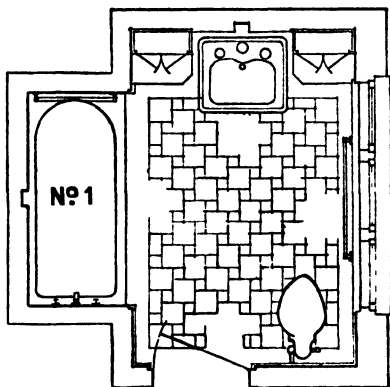
There should be at least one water closet extra in every household whether in the town or in the country, beyond what are provided in regular bathrooms, to meet urgent demands at times. A separate urinal in every bathroom is a necessity which stops a number of malpractices often observed in country houses. A love of cleanliness is perhaps not inborn, but is the result of civilization, of education,

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of a development of bodily righteousness which shows itself in an abhorrence of dirt either on one's person or his surroundings.

A few sketches and pictures of bathrooms of different designs in European style are described below.

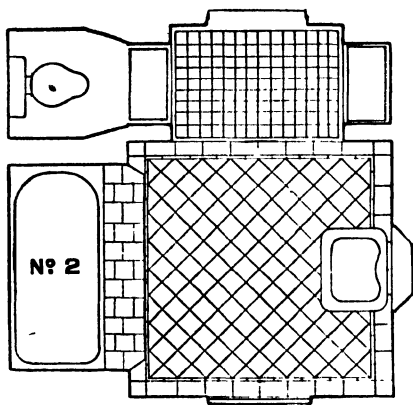
No. 1 Design of a bathroom in European style. The bath tub is in a recess, the wash-hand basin is in front with two cup boards on two sides, having wide open shelves at



the level of the basin. Note the placing of W. C. which automatically becomes hidden when the bathroom door is opened. This is a feature always recommended for every household. The large open window on the right may be utilized for sun bath and fresh air.

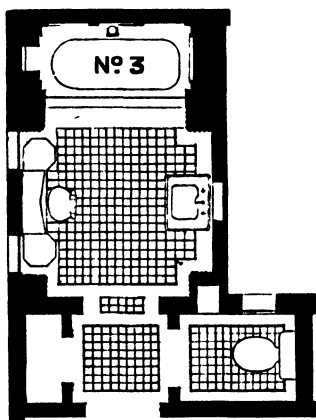
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No. 2 Design of a bathroom in European style. The W. C. room is separate and farther from the main bathroom with a cupboard and a window. The



bath tub is in a recess that helps the room to be fairly dry and cheerful.

No. 3 Design of a bathroom in European style. The W. C. room is separate and is just near the entrance with a cupboard on one side. The window for the W. C. cubicle is very conveniently placed on the side. The bathroom is equipped with a tub in

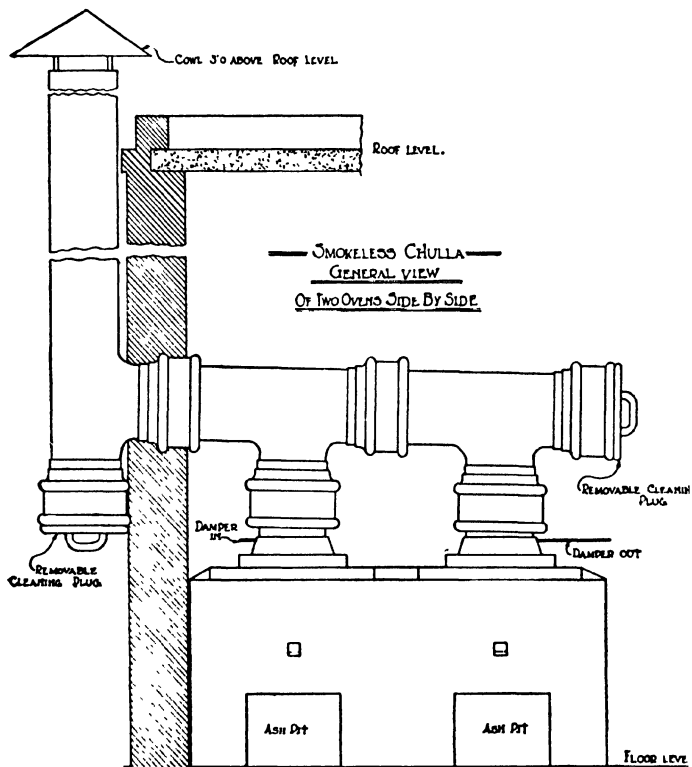


A MODERN COUNTRY HOUSE

recess, a wash-hand basin on one side and a dressing table on the other. Note the two small windows on the sides of the dressing table to make you cheerful in toilet finish.

Kitchens and pantries are to be taken care of with the same amount of ardour as bed or sitting rooms. Due to shortage of firewood as a fuel, even villages and countries are taking to coal for cooking. It is no doubt a convenient fuel for heating purposes where gas or electric conveniences are not available. But coal or coke, usually the latter, used for ordinary cooking should be burnt in proper ovens with arrangements for driving out smoke and soot far above the roofs of houses. Smoke from a coke fire blackens a bright room in no time while particles of soot are liable to lodge on articles of food if precaution is not taken by well designed chimneys to drive it out at a good height above the roof. The author has designed a system of ovens which obviates this difficulty with no great cost. A view and further details of this smokeless *chullah*,

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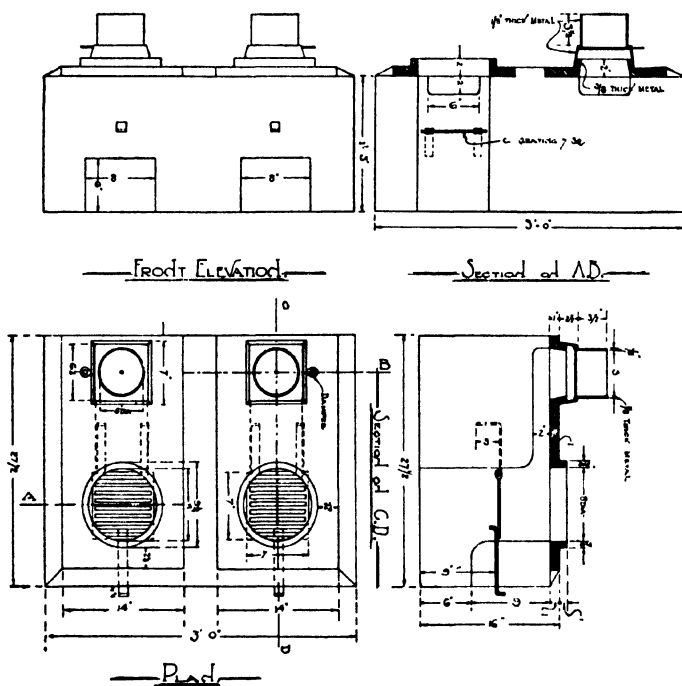
A MODERN COUNTRY HOUSE

as it is technically called, are illustrated in pages 76 and 78. This *chullah* is in great demand now-a-days in the city, where gas or electric cooking is found to be extraordinarily costly for most people.

The predominant feature of this smokeless *chullah* lies in its damper arrangement for driving out the smoke from coal fire through the flue pipe taken about 5 feet above the roof level. In each oven there is a cast-iron grating, which, when supported by a sliding stay, affords room for coal or coke to be burnt for the purpose of cooking. Firing of an oven of this type is so simple that no extra preparation is necessary except putting in a very small quantity of combustible wood shavings kindled along with coke to begin with and the damper is opened as shown on the right hand side of the picture in the general view.

The mouth of the oven is to be covered with an iron pan, not shown in the picture, at the time of firing and when the fire inside is found

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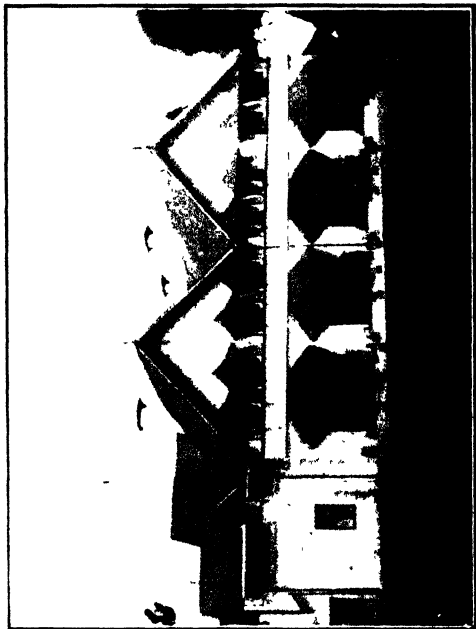
Details of smokeless *chullah*

A MODERN COUNTRY HOUSE.

to be quite ablaze, the cover is removed and the damper pushed in. There is a small hole in the centre of the damper plate, which keeps on the fire while cooking is continued. The damper is not to be handled until another charge of fuel is introduced.

The pantry room may have a sink and a tap for washing plates and dishes, and the kitchen may have a tap only for occasional washing of cooking utensils and garbage. In addition to all these washing places it is cleanly to have an outside cemented platform with a tap for washing utensils after the day's cooking. A masonry tank or *choubaccha*, about 60 gallons capacity, holding water for general cleaning near the washing platform outside is often found very convenient by servants and housewives.

A House on the Hills



CONCLUSION

NEGLECT of fresh air is a crime not infrequently punished with gradual sinking of vitality and reduction of longevity. See that your residential house is properly ventilated, even if your office or place of business cannot be so arranged. You have opportunities of spending time out of doors more often than your wife and children who must, therefore, be kept in fresh air surroundings to give you a warm reception at the fag end of the day when you retire into their midst.

Try to learn and study your own case carefully. You are the best doctor for yourself except in cases of accident. You cannot cure a boil or re-unite a fractured bone without the help of a surgeon; but you can surely avoid or cure a slow fever, general debility, nervous breakdown, and a number of ailments without the help of the healing profession, if you only try to know your own system. Careful living goes a long way to avoid usual diseases, and prevention is always

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safer than cure. When we have good health, we take it as a matter of course, and very few of us will be able to continue right living without meeting with some pitfalls. So prevalent is the habit of carelessness in regard to health, especially in cities and towns where enticements are legion, that a person with some functional disorder is often found to live longer than a strong person, [নিভারোগী চিরজীবী] because the affected one finds it necessary to live more carefully at all times. There are boasters who think that they can digest nails and armour plate but who discover at times that a glass of barley water hangs heavy on them. They begin to feel uncomfortable due to over-eating and are filled with a number of misgivings and a multitude of fears. They finally have to rush madly from physician to physician seeking vainly the help that can be found only within themselves.

Show a business man in the city where and how he loses by a certain course of action and he changes his course forthwith, but show any citizen how he loses his happiness of mind

A MODERN COUNTRY HOUSE

and soundness of body, and you will find him very slow, in changing his method of living and perhaps he will do so too late to recover.

Many efforts have been made by individuals, societies, and even business organisations to awaken people to the need for right living at all times, if they want to be healthy, happy, and successful. Perhaps only lately this lesson has been driven 'home' to certain sections only, and they are trying to get out of the clutches of town seductions and retiring to the country for real enjoyments. By means of statistics, examples, and experiments broadcasted through books, handbills, magazines, lectures, advertisements, etc., the people have been shown that they lose greatly in money and happiness by not taking proper care of themselves. It is difficult to estimate the economic loss and the want of happiness that has resulted from the common disorders easily curable by right living.

Many are inclined to think that it is good for every person to have some experience of

THE ESSENTIALS OF

everything on earth, good or bad, so as to realise practically the difference between the two. If you will do so, you will soon discover that you have created a tendency for indulging in a bad habit '*just this once*' and no more. This whets appetite for more, and once you yield, it makes it easier to yield the next time. It is, therefore, safer not to experiment on any bad habit, not to play with fire and test its destructive capacity. If you desire health, if you have any yearning towards the pleasures associated with abounding vitality, you will make up your mind once and for all to turn back on moderation in the country as against excesses in the city, fresh oxygenated air in rural areas as against polluted air of the town laden with carbon dioxide and other impurities, and to adhere strictly to those conducive to health. You will then enjoy living rightly. You will no longer look upon it as a continual self-denial. You will find that shifting from the city to the country has so many compensations besides the mere immunity from a number of diseases, which

A MODERN COUNTRY HOUSE

is no small thing in itself, that you will never like to go back to the city for a permanent living. No matter how many times you may meet with failures in continually striving to better your country life, you will finally have won the complete victory.

Delay is our great enemy. Many human beings are called upon to make heavy sacrifices in order to attain their goal. Others frequently benefit by their mishaps and seeming failures. An ardent lover of the country will be faced with a legion of arguments against leaving the city for a country life. But why? If you can live in the city with all its riches, why not adorn your country house with all those conveniences which can be easily secured if you have the will and purse to do so? Nature will be a great help in giving you vigour and energy to live a really healthy life.

To accomplish anything worth while first there has to be an aim or a purpose. There must be a goal towards which the individual

THE ESSENTIALS OF

directs his endeavours. If by my poor attempts I have been able even partially to convince my readers of the importance of living in a country house, I shall expect them to go ahead and show to others by their examples how plain living in the country will go a long way toward producing health and longevity.

Additional attractions available in the city, in cinemas, theatres, and circuses may be easily enjoyed by people living in suburbs, while they will avoid epidemics and contagions often virulent in the city by retiring to their country houses after such enjoyment.

Hot water installation, electrification, air conditioning, and various other modern amenities of life, as I have said, can also be arranged for in a country house, independent of any public utility company. Country house residents intending to go in for such installations will do well to consult experts on the subject. My object is only to point out the essential features of a village residence

A MODERN COUNTRY HOUSE

wanting improvements towards the comforts of modern life.

Finally study your own case carefully; always be vigilant not to indulge in any bad habits; adopt principles of moderation in your own individual needs, and try to think rightly. You will not repent changing from the usual run of people.

If you do the right, you will be serving God.

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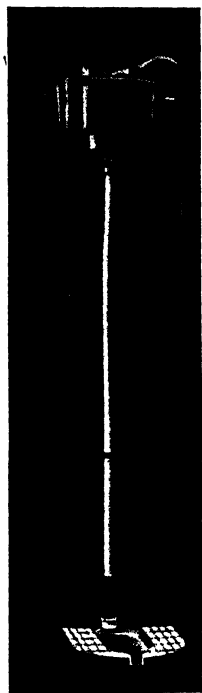
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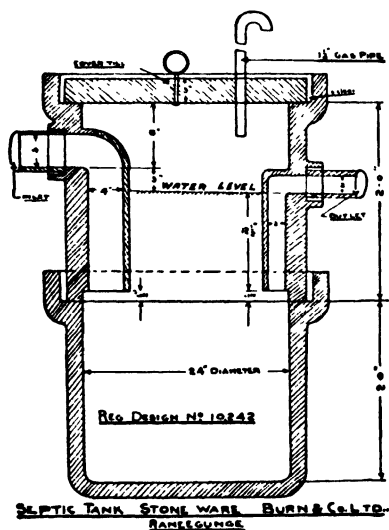
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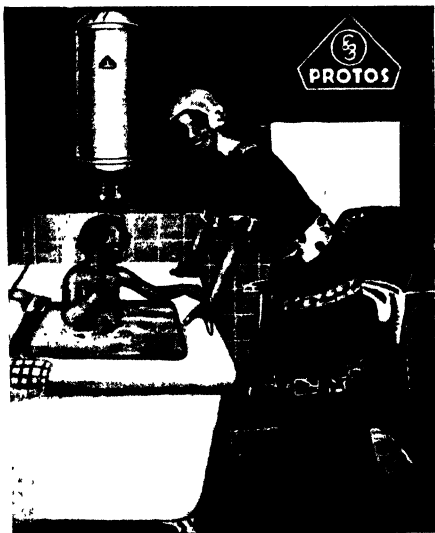
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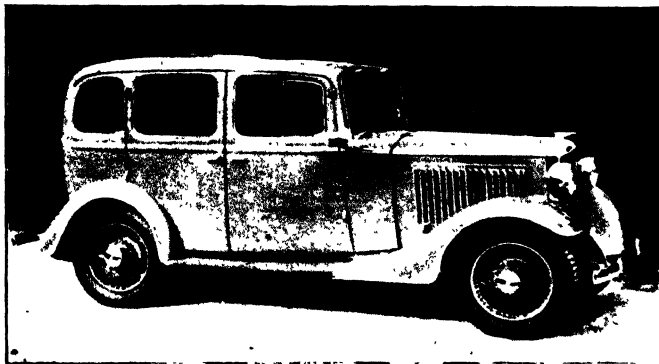
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